

REMARKS

Claims 1- 8, 10 - 18 and 20 are in this Application and are presented for reconsideration. By this Amendment, Applicant has amended claims 1 and 11 to highlight the important combination of features which define over the prior art of record.

Applicant thanks the Examiner for the careful reading of the application, and for providing suggestions. Applicant also thanks the Examiner for indicating allowable subject matter.

Drawings

The drawings have been objected to under 37 CFR §1.83(a) for failing to show the intake housing being aligned with the main direction of travel and the two-stage axial flow pump.

In response, Applicant notes herein that the intake housing is shown in Fig. 1 and has the reference number 4. Further, Applicant has canceled claims 9 and 19. However, it can be readily appreciated that another propeller may be provided on the propeller shaft and a guide vane (26) may be located in between to rectify the flow

35 U.S.C. §112

Claims 9 and 19 have been rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The Office takes the position that the specification fails to disclose how the two stage pump arrangement as claimed is incorporated

within the propulsion unit.

Applicant has now canceled these claims. However, a two-stage axial flow pump, namely adding another propeller is a concept understood in the art. The attached article of 11th International Symposium on Yacht Design and Yacht Construction, held on 13 and 14 of November in 1990, in Amsterdam shows the concept of adding another propeller. This reference came to applicant's attention in considering the 35 U.S.C. 112, first paragraph rejection (no fee is believed to be due). Further, such a multistage pump is known from GB 866,033 of record. Additionally, paragraph [0050] describes the positions of the second propeller in a concise and definitive manner with respect to the guide vanes 26.

35 U.S.C. §103(a)

Claims 1 -3, 5, 6, and 8 have been rejected under 35 U.S.C. 103(a) as being unpatentable over the U.S. Pat. No. 3,263,643 to Tattersall (the "Tattersall '643" reference, hereinafter) in view of EP '443. The Tattersall '643 reference disclose a propulsion unit having a propeller means fed with water by way of an intake opening disposed below the operating water level of the vehicle and in a plane substantially parallel to the flow of water past the vehicle in the vicinity of the opening, at least part of an edge of the opening transverse to the flow of water past the vehicle being formed by a surface movable continuously in the same general direction as the flow of water into the intake. The Office admits that the Tattersall '643 reference fails to disclose specifics of movable outlets, and relies on the EP 443 to show this feature.

The Tattersall '643 reference discloses a flush-fitting intake opening 6, and an inclined intake duct 7 connecting the intake opening 6 with the housing 3 (Column 2, lines 20-22). Further, the propulsion means in the form of an impeller 2 of a water jet propulsion system is positioned in a housing 3 of circular cross-section, in the housing 3 ending in a propulsion outlet 4 (Column 2, lines 15-20). Thus, it is clear from this description and all embodiment Figures of the Tattersall '643 reference that the shaft between the gear box 11 and the propeller 10 is in the region between the intake opening and the propeller 10 itself.

The EP '443 reference discloses a device for steering a ship's bow with the aid of a directional water stream. This device has an entrance opening 4 and a discharge opening 5, with a horizontal part of a shaft 6 provided with a pump impeller 7 (Page 3, lines 20-25). The fixed guide blades 16 of the wheel 15 ensure that the stream produced by the impeller 7 passes free of rotation to the discharge opening 5 (Page 3, lines 30-32). This shows that there can be no impediment such as a shaft which may cause cavitation to the stream produced by the impeller in the region between the impeller 7 and the discharge opening 5.

It is Applicant's position that claims 1 -3, 5, 6, and 8 are not obvious over the Tattersall '643 reference in view of the EP '443 reference. The present invention as claimed provides for a combination of features not taught by the prior art as a whole including the EP '443 reference.

Both the Tattersall '643 reference as well as the EP '443 reference disclose a propulsion unit having a propeller shaft arranged in the suction region of the pump housing. This is a position between the intake and the propeller. Such an arrangement has several disadvantages.

Because of the same water flow in which the propeller is situated is also distributed by the propeller shaft a turbulent flow region is formed upstream of the propeller (see attached sketch). This region of turbulence increases the danger of cavitation at the propeller and decreases the power of the hydrojet. Furthermore, this has been found to increase the level and degree of vibrations of the hydrojet and therefore also of the watercraft.

Contrary to this known arrangement, the present invention as claimed, provides an arrangement, in which the propeller shaft must be in the pressure region of the pump housing (on a delivery side of the pump housing section; compare sketch 2 of the figure below). In this arrangement, the water flow arrives at the propeller undisturbed. This provides a situation where even laminar flow feeds into the propeller region. This ensures an optimal incoming flow at the propeller. The power of the hydrojet increases and the danger of cavitation is much lower.

The steering shaft of the deflecting grid is on opposite sides in the examples shown in sketch 1 and 2.

As such, the invention presents a very different approach as compared to the prior art. Further, the prior art does not suggest the combination claimed. The combination addresses problems that were not considered in the prior art. The prior art presents no suggestion or motivation to provide the combination as claimed.

As to other aspects of the claimed invention, the claims now define a combination that is novel and is not suggested by the prior art.

Re "plate", the Patent Office takes the position that such fails to define any specific

structure and/or arrangement so as to define over the hull bottom.

Re "sections", the Patent Office takes the position that such fails to define any specific structure and/or arrangement so as to define over the housing of Tattersall, as "section" does not positively recite separate interconnected elements, but merely "portions".

Re claim 6, the Patent Office takes the position that the type of motor employed, be it an IC engine or electric motor, is considered to have been an obvious design consideration, well within the level of skill of the ordinary routineer working in the art at the time of the invention, and providing no unexpected results.

The features referenced are in claims that depend on the independent claim 1. As such, the combination of features patentably define over the prior art of record. Thus, it is Applicant's position that these claims are also not made obvious over the prior art of record.

Claim 7 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Tattersall in view of EP '443 as applied to claim 1 above, and further in view of Kobayashi.

The Patent Office notes that the Tattersall '643 reference fails to disclose a gearing arrangement as claimed and relies on the Kobayashi to teach same and concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to position the motor of Tattersall as taught by Kobayashi, such that is affixed to and supported by the propulsion unit. However, the prior art as a whole, including Kobayashi, fails to suggest the subject matter of the revised claims. Accordingly reconsideration of this rejection is requested.

Claim 9 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Tattersall '643 reference in view of EP '443 as applied to claim 1 above, and further in view of GB '033.

The Office notes that Tattersall fails to disclose a multiple stage pump and relies on the GB '033 to teach such an arrangement and concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to employ a two stage axial pump arrangement in Tattersall as taught by GB '033. However, the prior art as a whole, including GB '033, fails to suggest the subject matter of the revised claims. Accordingly reconsideration of this rejection is requested.

Claims 10 and 20 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Tattersall in view of EP '443 as applied to claim 1 above, and further in view of Winter.

The Office notes that the Tattersall '643 reference fails to disclose a variable pitch propeller and relies on the Winter to teach the same and concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a variable pitch propeller arrangement to Tattersall as taught by Winter. However, the prior art as a whole, including Winter, fails to suggest the subject matter of the revised claims. Accordingly reconsideration of this rejection is requested.

Claims 11-13 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tattersall in view of EP '443 and Kobayashi.

The Office notes that the Tattersall '643 reference further fails to disclose a housing provided with a bottom plate for installation in a hull and relies on the Kobayashi to disclose a mounting plate 17 for the propulsion unit and further concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a mounting plate to the propulsion unit of Tattersall as taught by Kobayashi. However, the prior art as a

whole, including Kobayashi, fails to suggest the subject matter of the revised claims.

Accordingly reconsideration of this rejection is requested.

Claim 19 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Tattersall in view of EP '443 and Kobayashi as applied to claim 11 above, and further in view of GB '033 as applied above. However, the prior art as a whole, including Kobayashi and GB '033, fails to suggest the subject matter of the revised claims. Accordingly reconsideration of this rejection is requested.

It is Applicant's position that the claims as now presented patentably define over the prior art as a whole. Accordingly, reconsideration of the rejections is requested. Further and favorable action on the merits is requested.

Respectfully submitted
for Applicant,



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Encl: Sketch

Tech Background reference and 1449 form

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SHOULD ANY OTHER FEE BE REQUIRED, THE PATENT AND TRADEMARK OFFICE IS
HEREBY REQUESTED TO CHARGE SUCH FEE TO OUR DEPOSIT ACCOUNT 13-0410.

Prior Art

